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28765 7590 05/18/2009

WINSTON & STRAWN LLP
PATENT DEPARTMENT
1700 K STREET, N.W.
WASHINGTON, DC 20006

EXAMINER

MENZ, LAURA MARY

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 05/18/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/773,696

02/06/2004

Mervyn John Rose

85170-5100

7787

TITLE OF INVENTION: FIELD EMISSION BACKPLATE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	08/18/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

28765 7590 05/18/2009

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,696	02/06/2004	Mervyn John Rose	85170-5100	7787

TITLE OF INVENTION: FIELD EMISSION BACKPLATE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	08/18/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
MENZ, LAURA MARY	2813	438-020000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,696	02/06/2004	Mervyn John Rose	85170-5100	7787
28765	7590	05/18/2009	EXAMINER	
WINSTON & STRAWN LLP PATENT DEPARTMENT 1700 K STREET, N.W. WASHINGTON, DC 20006			MENZ, LAURA MARY	
			ART UNIT	PAPER NUMBER
			2813	
DATE MAILED: 05/18/2009				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/773,696	ROSE ET AL.	
	Examiner	Art Unit	
	Laura M. Menz	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 5/7/08.
2. ☒ The allowed claim(s) is/are 6-13,39-63 and 65-67.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
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DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Alan Fanucci on 5/8/09.

The application has been amended as follows:

Claims 1. to 5. (Cancelled)

6. (Currently Amended) A field emission backplate comprising a planar body or thin film, the planar body or thin film comprising an amorphous semiconductor based material and a plurality of crystalline emitter sites formed by laser crystallization of respective portions of the planar body or thin film of amorphous semiconductor based material from exposure to at least one pulse laser interference pattern.

7. (Previously Presented) The field emission backplate of claim 6, wherein the semiconductor based material is silicon or an alloy thereof.

8. (Original) A field emission device comprising the field emission backplate of claim 6.

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9. (Previously Presented) The field emission device of claim 8, wherein the field emission device is a vacuum device, wherein the emitter sites of the backplate act as an emission source in the device.

10. (Previously Presented) The field emission device of claim 9, further comprising a substrate, an evacuated space and a transparent window, wherein the field emission backplate is formed upon the substrate and the evacuated space is located between the field emission backplate and the thin film transparent window metal or metallised phosphor.

11. (Previously Presented) The field emission device of claim 8, further comprising a wide band-gap light emitting material into which the electrons from the emitter sites of the backplate are emitted in use.

12. (Previously Presented) The field emission device of claim 11, further comprising a substrate, the field emission backplate having formed on one side thereof the plurality of emitter sites, the wide band-gap light emitting material comprising a light emitting polymer, and a transparent metal or metallised phosphor, wherein the field emission backplate is formed upon the substrate, and one surface of the light emitting polymer is disposed on the plurality of emitter sites of the field emission backplate, the thin film transparent metal window being disposed on another surface of the light emitting polymer.

13. (Previously Presented) The field emission device of claim 8, wherein the device is a display device.

Claims 14. to 38. (Cancelled)

39. (Currently Amended) A method of forming the field emission backplate of claim 6 comprising:

providing a planar body of amorphous semiconductor based material upon a substrate;
and

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laser crystallizing portions of the amorphous semiconductor based material by exposure to at least one pulse laser interference pattern;

wherein upon crystallizing the portions of the amorphous semiconductor based material a plurality of emitter sites are formed on the amorphous semiconductor based material.

40. (Previously Presented) The method of claim 39, wherein the planar body of amorphous semiconductor based material is provided by depositing a thin film of material upon the substrate.

41. (Previously Presented) The method of claim 39, wherein the semiconductor based material is silicon or an alloy thereof.

42. (Currently Amended) The method of claim 39, ~~further comprising~~ wherein the step of performing laser crystallizing ~~using~~ is conducted with an excimer or Nd:YAG laser.

43. (Previously Presented) The method of claim 42, wherein the excimer laser is a KrF laser.

44. (Currently Amended) A field emission backplate comprising a planar backplate member substantially comprising an amorphous semiconductor based material, the planar backplate member further comprising a plurality of grown tips substantially comprising a crystalline semiconductor based material formed by laser crystallization on the planar backplate member by exposure to at least one pulse laser interference pattern.

45. (Previously Presented) The field emission backplate of claim 44, wherein the substantially planar backplate comprises a thin film of amorphous semiconductor based material.

46. (Previously Presented) The field emission backplate of claim 44, wherein the amorphous semiconductor based material is silicon or an alloy thereof.

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47. (Previously Presented) The field emission backplate of claim 44, wherein the plurality of tips are grown in a manner resulting in each having a sharp, pointed shape.

48. (Previously Presented) The field emission backplate of claim 44, wherein the plurality of tips are grown and etched simultaneously.

49. (Previously Presented) The field emission backplate of claim 44, wherein the crystalline semiconductor based material is a silicon.

50. (Previously Presented) The field emission backplate of claim 44, wherein each of the tips is formed on a respective crystallized area of the planar member.

51. (Previously Presented) A field emission device comprising the field emission backplate according to claim 44.

52. (Previously Presented) The field emission device of claim 51, wherein the plurality of grown tips comprise an array of profiled tips formed by the selective growth of crystalline semiconductor based material on a plurality of crystallized areas of the substantially planar backplate comprising a thin film of amorphous semiconductor based material.

53. (Previously Presented) The field emission device of claim 52, wherein the device is a vacuum device, and wherein tips act as an emission source in the device, in use.

54. (Previously Presented) The field emission device of claim 51, further comprising a substrate, an evacuated space and a transparent window, wherein the field emission backplate is formed upon the substrate and the evacuated space is located between the field emitting backplate and the transparent window.

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55. (Previously Presented) The field emission device of claim 52, further comprising a wide band-gap light emitting material into which electrons from the tips are emitted.

56. (Previously Presented) The field emission device of claim 55, further comprising a substrate, the wide band-gap light emitting material, and a transparent window, wherein electrons from the tips are emitted into the wide band-gap light emitting material.

57. (Previously Presented) The field emission device of claim 56, wherein the wide band-gap light emitting material is a light emitting polymer.

58. (Previously Presented) The field emission device of claim 56, wherein the transparent window is a thin film transparent metal.

59. (Previously Presented) The field emission device of claim 56, wherein one surface of the light emitting material is disposed on the plurality of tips of the field emission backplate and the transparent window is disposed on another surface of the light emitting material.

60. (Previously Presented) The field emission device of claim 52, wherein the device is a display device.

61. (Previously Presented) The field emission device of claim 52, wherein the tips of the field emission backplate are of a density of at least 100 per square micron.

62. (Currently Amended) A method of forming a field emission backplate according to claim 44, the method comprising:

depositing a thin film of amorphous semiconductor based material upon a substrate;

locally laser crystallizing a plurality of areas of the thin film amorphous semiconductor based material by exposure to at least one pulse laser interference pattern; and

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growing crystalline semiconductor based material upon each of the plurality of crystallized areas of thin film amorphous semiconductor based material.

63. (Previously Presented) The method of claim 62, further comprising the steps of depositing the thin film of amorphous semiconductor based material by plasma enhanced chemical vapor deposition.

64. (Canceled)

65. (Previously Presented) A method of crystallizing areas of thin film amorphous semiconductor based material for use in the field emission backplate of claim 44, the method comprising:

forming a laser interferometer by splitting and recombining a laser beam;

placing a thin film of amorphous semiconductor based material in the plane of the recombination of the laser beam;

locally crystallizing areas of the thin film of amorphous semiconductor based material by subjecting the thin film to at least one laser pulse wherein the crystallized areas generated in the thin film amorphous semiconductor based material correspond to the interference pattern of the laser.

66. (Previously Presented) The method of claim 65, wherein for a backplate of amorphous semiconductor based material, wherein the semiconductor based material is hydrogenated amorphous silicon, the laser operates at a wavelength of around 532 nm to maximize absorption.

67. (Previously Presented) The method of claim 65, wherein the laser is a Nd:YAG laser.

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Allowable Subject Matter

Claims 6-13, 39-63, 65-67 are allowed.

The following is an examiner's statement of reasons for allowance: Applicant's remarks dated 5/7/08 are considered persuasive and the above Examiner's Amendment has been made to further clarify the allowable subject matter.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M. Menz whose telephone number is (571) 272-1697. The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Landau can be reached on (571) 272-1731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Laura M Menz/
Primary Examiner, Art Unit 2813

05/08/09